SOME OF THE SEQUELÆ

OF

ACUTE INFECTIOUS DISEASES IN CHILDREN.

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SOME OF THE SEQUELÆ OF ACUTE INFECTIOUS DISEASES IN CHILDREN.

THE pathology of chronic ill-health in children is of much practical interest, and the difficulty of arriving at a correct judgment of individual cases is sometimes very great. In the out-patient room of a children's hospital, the oft-repeated expression of "falling" or "wasting away" is one of the most frequent which the physician hears. A careful physical examination in a large proportion of cases will be sufficient to reveal the presence of some disease. Not unfrequently, however, such exploration fails to throw any light upon the case, and it is only after an attentive consideration of its history, and a more prolonged study, that we can arrive at any definite conclusion as to its nature.

Perhaps the most common causes of chronic ill-health in children are, syphilis, rickets, and scrofula; the two former chiefly commencing in infancy, the last manifesting itself later on in childhood. These I do not propose to consider, but rather to offer a few observations on some of the less frequent, and perhaps in many cases not so generally recognised, causes of ill-health in children after the more common acute infectious diseases. When I say not so generally recognised, I mean as being directly or indirectly induced by, or a sequela of, these diseases.

In the examination of sick children, in hospital practice especially, I always try to impress upon students the necessity of a strict inquiry into the previous history of the case, as likely to give a clue to its elucidation. This is all the more necessary, as among the poorer classes especially, and even in practice generally, there is a tendency, if not to ignore, at all events to regard as trivial, the common acute infectious diseases of childhood. I need hardly say I allude more particularly to scarlatina, measles, and hooping-cough. Of so little importance do mothers consider these maladies, that not unfrequently in the hospital out-patient room I find, in answer to the query, "Has the child ever had any previous illness?" the reply is in the negative, when, to the succeeding question, "Has the child had measles, hooping-cough, or scarlatina?" an affirmative is at once given, thereby impressing one with the idea that mothers consider these diseases of little or no importance in the catalogue of their children's ailments. I therefore always teach the necessity of making careful and specific inquiry as to the previous existence of these diseases.

In obedience to the generally recognised law that organs or functions develop tendencies to disease in direct ratio to their normal or physiological activity, we find that in children the acute diseases are a fruitful cause of initiating chronic disturbance of function or disease in certain organs, or systems, which present great functional activity in the early periods of life. In childhood the function of nutrition in all its parts is unusually active, and also the process of development, and it is by an interference with these functions that the more common acute diseases appear to exercise such serious after-effects in children.

Practically, the most common acute infectious diseases which we have to deal with in children are scarlatina, measles, and hooping-cough. Comparatively few children attain the age of puberty without having been attacked with one or other or all of these complaints, and a certain proportion of them suffer immediately or remotely from chronic ill-health which may or may not be accompanied by some organic affection of internal organs. In these diseases there are certain sequelæ which are considered more or less peculiar to each. I do not intend to enter into a general discussion of these, but to refer to some less frequent, often more remote, and not so generally recognised as directly connected with the disease which has preceded them, possibly by many months, or even years.

General Debility, persisting long after the ordinary period of convalescence, is a condition not unfrequently met with after an attack of measles, scarlatina, or hooping-cough, and this apparently independent of any existing organic disease. The symptoms which characterize this condition are generally those indicating a lowering of vital power, and interference with the nutritive functions of the body, more or less emaciation, languor, and depression, disinclination to play, want of appetite, and sometimes headache. During convalescence from such diseases, and for some time after, it is our duty to bear in mind the necessity for an observance of proper dietetic and hygienic rules, and the administration of tonics and the adoption of all means tending to restore the bodily functions to a healthy state. In the great majority of cases, under such conditions, all goes on well, and our little patient steadily recovers from the evil effects of the disease. In certain instances, however, such a favourable result does not obtain, and the child may remain weak and "out of health" for a considerable time, and ultimately fall a prey to some other disease, the ravages of which once started, the system, on account of its debilitated state, is unable to resist. General debility must, then, be combated by careful management, in order that the system may be enabled to resist the possible onset of other diseases.

Lymphatic Glandular Affections may follow any of those diseases which I have referred to.

The disturbance of nutritive tissue function which acute infectious disease produces, naturally tends to affect the lymphatic system, which is so intimately connected—although the exact function of the glands has not yet been determined by physiologists—with nutrition. Through the researches chiefly of Klein, we are now well informed as to the anatomical structure and relations of the lymphatic vessels, and it cannot be doubted, from the close connexion which exists between them and the ultimate tissue elements, that the functions of this system, and of the glands through which the products carried by the vessels pass, are of great importance in nutrition. Recent researches would seem to point to an intimate relation between the ultimate lymphatics and the connective tissue, and the probability that these vessels form a kind of connective-tissue circulatory system. In any case, it can hardly be wondered that the glands are so frequently affected in children after acute disease. An appreciation of this fact, and a knowledge of the liability of the lymphatic glands to temporary or permanent disease, gives a key to the pathology and diagnosis of many of the more serious and fatal diseases of childhood.

In a rough way the lymphatic glands may be divided into two classes, those which are situated subcutaneously on the surface of the body, and in the great cavities, in intimate relation to the viscera. It is more particularly to the latter that I desire to refer. The frequent enlargement of the cervical glands after scarlatina is well known. The equally common and not so generally recognised forms of bronchial and mesenteric glandular hyperplasia, following more particularly measles and hooping-cough, are too often overlooked. The cause of this would appear to be the difficulty of making a positive diagnosis in such cases, arising from the total absence of physical signs, and also the length of time which often elapses—it may be months or years—before any evil effects manifest themselves, the true state of the case remaining obscure until a post-mortem examination reveals its exact nature.

I. *Bronchial Glandular Hyperplasia, Bronchial Phthisis.*—Whether in all cases of measles where there is much bronchial catarrh, and in most cases of hooping-cough, the lymphatic glands are irritated and enlarged during the acute stage of the disease, returning to their normal size after its disappearance, is still unsettled. The fact that they are enlarged in many cases, and remain permanently so, must, I think, be admitted. During convalescence from measles and hooping-cough it is of extreme importance to keep this fact before us, and also the possibility of ultimate caseous degeneration of the glands, which may lead to a fatal issue by steadily progressive emaciation and exhuastion, or, as more frequently occurs, the production of secondary general tuberculosis, which usually causes death in children by meningitis. In inquiring into the results of autopsies in the Royal Hospital for Sick Children for the last few years, I find it is quite an exceptional thing to meet with cases of tuberculosis in which there did not pre-exist some caseating mass in the lymphatic glands or elsewhere. In a large majority of these cases the bronchial or mesenteric glands were affected, and subsequently to either measles or hooping-cough. Whatever the explanation may be, or what the rationale of its occurrence, or the sequence of events, the fact remains as I have stated, and I cannot help thinking it lends strong support to the correctness of the well-known views of Buhl, Cohnheim, Burdon Sanderson, and others, as opposed to those of Klebs and Villemin, that the infecting substance is formed in the glands themselves, and not from some specific virus developed outside the body altogether. Whether caseating glands in children be one of the chief factors in the production of tuberculosis, as they are certainly of chronic ill-health, the importance of recognising their presence at an early stage cannot be overestimated; and this brings me to say a few words as to the diagnosis more particularly of enlarged bronchial glands. These glands are situated in the posterior mediastinum, in immediate relation to the bifurcation of the trachea and the roots of the lungs. On the surface of the body the site of the former corresponds anteriorly to the first bone of the sternum, posteriorly to the second or third upper dorsal vertebræ. The glands are ten or twelve in number, and lie in the cellular tissue of the posterior mediastinum, in close relation to the trachea and bronchi. It may be at once stated, as a fact generally admitted, that, although considerably enlarged, their recognition by physical exploration is usually attended by negative results. One of our most careful clinical observers of disease in children states, "In order to afford signs of its presence, the disease of the glands must be sufficient to produce considerable enlargement; for unless their size is so much increased as to produce derangement of function in neighbouring organs, the lesion is one which cannot be satisfactorily diagnosed."[1] It may be stated, likewise, with tolerable probability, and my own experience bears this out, that in the larger proportion of all cases met with, and in those in which serious results follow the chronic glandular hyperplasia, the enlargement has not been sufficient to cause injurious pressure on neighbouring structures. If this be the case, the usual signs which are described as denoting the presence of these buboes, such as venous turgidity and lividity of the face and neck, dyspnœa and spasmodic cough, and dulness, either anteriorly over the upper sternal region or posteriorly, will not be present. What have we, then, to guide us in diagnosing this the largest class of cases, in which really no well-marked physical signs exist? In regard to percussion dulness, I have seldom found any marked change in examining the front of the chest over the sternum, but in a certain proportion of cases there has been dulness more or less marked in the interscapular region, immediately on each side of the spines of the upper dorsal vertebræ. Laying physical signs, however, aside, have we nothing to guide us in the general condition of the patient in other respects, and particularly in the *clinical history* of the case? The condition—enlarged bronchial glands—is sometimes known as tuberculization of bronchial glands, or bronchial phthisis. This last term is clinically correct, because one of the chief, and in some cases, I believe, the only sign we have to guide us is steadily progressive emaciation, which cannot otherwise be accounted for. If, along with this increasing emaciation and the absence of signs of organic disease of internal organs, we have the previous history of hooping-cough or measles, the two diseases which above all others are most frequently followed by bronchial glandular hyperplasia, our diagnosis will be pretty well assured. In general terms, it may be stated that, given a child who has suffered within a year or eighteen months previously from either of those diseases, and who is in a chronic state of ill-health and undergoing progressive wasting with no symptoms of disease of any internal organ, the probable existence of bronchial phthisis, more rarely of mesenteric phthisis, may be suspected. In illustration, I extract from the record of a case, one of many similar which I possess, a few particulars. Alex. M'D., æt. 2½, was brought to the Royal Hospital for Sick Children on 8th February 1881, suffering chiefly from debility and wasting. The mother stated he was a healthy child till he was attacked by measles a year ago, since which he has never been quite well. He was a breast baby. There were no marks nor history of syphilis. On examination all organs yielded negative results as to signs of disease. There was nothing positive in regard to the child's condition but progressive emaciation. He was under careful observation for five months, and the course of the case was watched with interest by the gentlemen attending the out-door clinic. I ventured to express an opinion, many weeks before the child died, based upon the general history of the case, and its negative clinical features, but more particularly on account of the antecedent history of measles, that subsequent to this disease, and as a direct result of it, bronchial glandular hyperplasia had been established, followed by caseation of the glands, and that probably general tuberculosis would follow, or was then actually existent. The subsequent history of the case amply verified such a diagnosis, the child succumbing to meningitis a few weeks after. On post-mortem examination, the tracheo-bronchial lymphatic glands were enlarged and caseous, the lungs, liver, and other organs studded with small, gelatinous-looking, so-called miliary tubercles, and the brain presented all the usual characters of meningitis. This is a very ordinary history, as the records of our hospital testify. Measles is, I believe, the most common predisposing cause of this sequence of events. Hooping-cough also, as might be shown by bringing forward cases, causes a similar train of clinical features. I relate briefly one case in illustration.

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[1] Eustace Smith on *Wasting Diseases*, p. 261.

Marion C., æt. 3 years 8 months, was brought to hospital on 10th August 1880. She was a healthy child, and never suffered from any illness until six months ago, when she was attacked with pertussis, which lasted for four months. Since then she has been quite free from cough, but her general health has not been satisfactory. On examination she was not an unhealthy-looking child, being fairly well nourished. She was, however, languid and listless, had little appetite for food, the bowels were irregular, the muscular system was soft and flabby. Ordered emulsion of cod liver oil, regulation of diet, and change of air if possible. On the 13th inst., or three days after examination, she began to be troubled with vomiting coming on at irregular intervals without reference to the ingestion of food. On the 15th inst. drowsiness supervened, and she sank rapidly from meningitis. On post-mortem examination, the brain presented all the usual signs of basic meningitis and general subarachnoid effusion. The ventricles contained about six ounces of fluid. The lungs, liver, kidneys, and peritoneum were studded with tubercles. Tracheo-bronchial glands enlarged and caseous. The frequent occurrence of such a train of events as this following measles and hooping-cough is a clinical fact of very great importance, and its realization ought to make the physician more than ever careful to watch the progress of children who have suffered from these diseases for many months, even years, after the attack. Any deviation from the normal standard of health should be carefully inquired into and treated. It is of special importance, after all these acute infectious diseases, to attend to the dieting and general hygienic condition of children, more particularly, I think, to the digestive functions, and to administer such remedies as cod-liver oil, hypophosphites, or iodides. As a matter of routine, I am now in the habit of ordering these remedies to be continued for months after recovery from these affections, when there is any delay in convalescence or a return to healthy bodily function and the natural standard of health.

II. *Mesenteric Glandular Hyperplasia, Mesenteric Phthisis.*—This disease, although long considered to be almost solely the outcome of the scrofulous constitution, not unfrequently, although more rarely than the bronchial variety, attacks previously healthy children who have suffered from acute infectious disease. I have met with it after measles and scarlatina or typhoid fever. It may also occur independently of all these conditions in carelessly fed children who have frequently had gastro-intestinal dyspepsia, or catarrh, or chronic diarrhœa. Well-marked examples of tabes mesenterica—and by these I mean cases where there is general enlargement of the glands, without any other special local affection, in fact, where the mesenteric disease is the really active and prominent condition from which the child suffers—are, comparatively speaking, rare. Slight enlargement of the glands is not by any means an uncommon occurrence in cases of general tuberculosis. The diagnosis of this condition is not always easy, though perhaps hardly so obscure as the bronchial variety. The situation of the glands enables us to feel them more readily, and the oft emaciated state of the child, and the retracted condition of the abdominal parietes lends additional facilities to diagnosis. There cannot be said to exist any special symptoms of this affection. The state of the digestive system is seldom natural, but not usually characteristic. We may either have constipation or diarrhœa, or an alternation of these. If the glands cannot be distinctly felt, we must arrive at our diagnosis very much in the way we are constrained to do in the bronchial variety, judging by the history of the case and the general state of nutrition. With reference to the diagnosis of mesenteric and bronchial phthisis and their association with general tuberculosis, I have made no allusion to the temperature, for I am convinced, from careful observations I have made now in a large number of cases, that the thermometer is a most unreliable guide to the presence of tubercle, *per se*, in the lymphatic glands or elsewhere. My observations on this point lead me to the conclusion that the actual existence of tubercle in organs, so long as there is no concomitant inflammatory action going on, does not cause any rise of temperature, the fact being that tubercles may exist in the lungs, liver, or elsewhere, for a long time without producing any irritation.

Nasal Catarrh is a frequent sequela of measles and scarlatina, but often thought little of and left untreated. In my experience it is sometimes attended by ulterior serious consequences, and even the milder forms of the disease cause much inconvenience and keep the child in an irritable state, and may seriously interfere with sleep and feeding. It is our duty, I submit, to treat such conditions by suitable local as well as constitutional means, even in the milder cases. In its simplest form the nasal mucous membrane is red and irritable, secreting freely, and the discharge, escaping anteriorly, often gives rise to an eczematous or herpetic eruption on the upper lip. The child is generally debilitated and feverish, and restless during sleep. Such cases yield readily to proper feeding and tonics, along with such applications as vaselin and lead ointment to anterior nares, or, if necessary, brushing with a solution of nitrate of silver. In the more severe forms of nasal catarrh you have increased inflammation and thickening of the mucous membrane of the anterior nares, often accompanied by superficial ulceration. When this condition is allowed to run its course, not unfrequently the anterior nares become nearly occluded, so that respiration is greatly interfered with.

The most aggravated case of this kind I have treated was that of a little girl, Marion M., aged three years, who was brought to the hospital with the history that her nose had been running ever since she had measles, six months previously. On examining the openings of the anterior nares, the mucous membrane and sub-mucous tissues were much infiltrated, and the orifices only admitted a surgical probe with difficulty. The child was thin and miserable-looking and of scrofulous diathesis. Its appetite was bad, and sleep much interfered with. Under suitable local and constitutional treatment the structural condition of the anterior nasal orifices was entirely remedied. A more serious consequence of nasal catarrh is ulceration of the middle nares, with or without caries of the turbinated bones or vomer. This is more rarely met with, and generally occurs in strumous or syphilitic children, constituting true ozæna.

Gastro-Intestinal Affections.—Both scarlatina and measles may develop, during convalescence, different kinds of gastro-intestinal disorder. The follicular enteritis, following scarlatina more frequently than measles, is a well-known and dangerous complication. This condition, however, is generally well recognised, and I do not enter upon it.

Atonic Gastro-Intestinal Dyspepsia is not unfrequently met with, and is apt to persist for a considerable time, after both measles and scarlatina. The general symptoms are loss of appetite, usually thirst, tendency to nausea or vomiting after food, and not unfrequently diarrhœa, sometimes of a lienteric character. The child is thin, pallid, and at times feverish. There is generally, however, an absence of pyrexia of a continued character, and not unfrequently the temperature tends to be subnormal. The tongue in colour is either normal or slightly paler than natural, and deficient in epithelial covering. This condition is sometimes very intractable, and prolongs the period of debility during convalescence indefinitely. It requires very careful dieting, and the administration of food in small quantities at a time, and of a light, digestible nature, with small doses of arsenic, which acts often like a charm in restoring the tone of the stomach. Nux vomica is also of service, more especially in the intestinal variety, and when there is a tendency to lienteric diarrhœa. Another variety of dyspepsia, and one which has been dignified by the name of "mucous disease" by Dr Eustace Smith, is met with most frequently after hooping-cough. A perusal of Dr Smith's monograph on the subject well deserves attention. He describes, in his usual graphic manner, the clinical features of the aggravated form of this condition. It is characterized by languor, depression, disinclination to play, restlessness during sleep, and sometimes fits of "night terrors." The appetite is very capricious, there is generally constipation, alternating at intervals with irritation and looseness of the bowels. The tongue is flabby, clean, or slightly furred, with prominence of the papillæ, more particularly the fungiform, and usually covered with excess of mucus, giving it a glossy or varnished appearance. The stools are generally costive, and contain a quantity of mucus. Alternating with this condition you have recurrent attacks of vomiting and diarrhœa, after which the child is often much relieved for a time, only to relapse after a certain period into its former condition. The disease is rarely seen in infants, but usually in children above the age of four. The treatment so carefully laid down by Dr Smith I have found generally successful. It is chiefly dietetic, and must be conducted on the principle of abstinence from saccharine and starchy kinds of food, as well as most kinds of vegetables, restricting the child chiefly to milk and bread, eggs raw or lightly cooked, meat soups, and meat. This conditition is also associated with a harsh and dry state of the skin, and gradual and progressive emaciation characterizes the severe forms of the disease. Although the appetite is often good, sometimes voracious, the food is not properly digested, and causes flatulence, colic, and restlessness during sleep. Many of the well-marked and severe cases of this affection which have come under my observation have been associated with or followed by lymphatic glandular hyperplasia and caseation ending in general tuberculosis.

Cutaneous Eruptions are very frequent as a remote result of acute infectious diseases, and more particularly of measles. In hospital and dispensary practice the most frequent are the chronic pustular affections, ecthyma and impetigo, the former affecting the lower half of the trunk and legs, more rarely also the arms, the latter attacking the head. Both forms generally yield in due course to careful dietetic and tonic treatment, preceded by administration of stomachic medicine if there be any digestive derangement.

I regret that the limits of a short paper have prevented me from entering with more minuteness into a description of these sequelæ. My object has rather been, while describing leading features, to point out the probability of their intimate connexion with the diseases which have preceded them, and the necessity of the very careful management and treatment of children during convalescence and for some time after having suffered from any of these more common acute infectious maladies.

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